

6. Balance sheet items

6.1. Intangible assets

Cost in thousands of €	Licenses, patents & similar rights	Computer software	Rights to use land	Develop- ment costs	Other	Total
As at 1 January 2015	23 483	71 683	72 856	19	24 081	192 121
Expenditure	26	5 389	194	-	259	5 868
Disposals and retirements	-23	-601	-16	-	-79	-719
Transfers ¹	-	119	7 738	-	-	7 857
New consolidations	674	258	5 843	-	919	7 694
Deconsolidations	-425	-20	-2 703	-	-353	-3 501
Exchange gains and losses (-)	9	1 533	3 850	-	1 497	6 889
As at 31 December 2015	23 744	78 360	87 762	19	26 324	216 208
As at 1 January 2016	23 744	78 360	87 762	19	26 324	216 208
Expenditure	-	5 629	325	-	-	5 954
Disposals and retirements	-130	-439	-	-	-	-569
Transfers ¹	-	-28	-	-	29	1
Reclassification to (-) / from held for sale	-	-894	-10 218	-	-	-11 112
New consolidations	-	955	-	-	50 714	51 669
Exchange gains and losses (-)	21	532	-2 250	-	-2 939	-4 636
As at 31 December 2016	23 635	84 115	75 619	19	74 128	257 515

Accumulated amortization and impairment

As at 1 January 2015	8 350	58 878	11 157	19	15 631	94 034
Charge for the year	1 647	4 160	1 751	-	2 154	9 712
Impairment losses	-	11	1 534	-	241	1 786
Disposals and retirements	-23	-601	-	-	-79	-703
Deconsolidations	-425	-18	-537	-	-352	-1 332
Exchange gains (-) and losses	33	1 240	719	-	1 271	3 263
As at 31 December 2015	9 582	63 670	14 624	19	18 866	106 760
As at 1 January 2016	9 582	63 670	14 624	19	18 866	106 760
Charge for the year	1 585	4 698	1 665	-	5 227	13 175
Impairment losses	-	484	73	-	-	557
Reversal impairment losses and depreciations	-	5	-	-	-	5
Disposals and retirements	-130	-414	-	-	-	-544
Transfers	68	-	-	-	-68	-
Reclassification to (-) / from held for sale	-	-1	-1 589	-	-	-1 590
Exchange gains (-) and losses	10	435	-375	-	-1 295	-1 225
As at 31 December 2016	11 115	68 877	14 398	19	22 730	117 138
Carrying amount						
as at 31 December 2015	14 162	14 690	73 138	-	7 458	109 448
Carrying amount						
as at 31 December 2016	12 520	15 238	61 221	-	51 398	140 377

¹ Total transfers equal zero when aggregating the balances of 'Intangible assets' and 'Property, plant and equipment' (see note 6.3.).

The software expenditure mainly relates to the Satellite project (sales and outbound logistics), the MES project (Manufacturing Excellence System) and ERP software (SAP).

New consolidations in 2016 relate to the merger with Bridon (see note 7.2. 'Effect of business combinations'), these include the brand name(s) (€ 45.5 million), the customer relationships (€ 4.8 million) and the order book (€ 0.4 million). The useful economic life of the brand name is estimated at 15 years while the customer relationships are amortized over 12 years.

The reclassification to held for sale mainly related to Bekaert (Huizhou) Steel Cord Co Ltd. Additional information relating to the reclassification to held for sale is provided under note 6.11. 'Assets classified as held for sale and liabilities associated with those assets'.

No intangible assets have been identified as having an indefinite useful life at the balance sheet date.

6.2. Goodwill

This note mainly relates only to goodwill on acquisition of subsidiaries. Goodwill in respect of joint ventures and associates is also disclosed in note 6.4. 'Investments in joint ventures and associates'.

Cost in thousands of €	2015	2016
As at 1 January	38 018	53 977
Increases	16 701	116 245
Deconsolidation	-1 010	-
Exchange gains and losses (-)	268	701
As at 31 December	53 977	170 923

Impairment losses in thousands of €	2015	2016
As at 1 January	19 535	18 278
Deconsolidation	-1 010	-
Exchange gains (-) and losses	-247	300
As at 31 December	18 278	18 578
Carrying amount as at 31 December	35 699	152 345

The increase in the goodwill in 2016 relates to the BBRG business combination. More information about the goodwill calculation is provided in note 7.2. 'Effect of business combinations'. In 2015, the increases resulted from the business combination with Pirelli (€ 3.5 million) and the acquisition of Arrium's ropes business in Australia (€ 13.2 million).

Goodwill by cash-generating unit (CGU)

Goodwill acquired in a business combination is allocated on acquisition to the cash-generating units (CGU) that are expected to benefit from that business combination. The carrying amount of goodwill and any related movements of the period have been allocated as follows:

Segment in thousands of €	Group of cash-generating units	Carrying amount 1 Jan 2015	Increases	Impairments	Exchange differences	Carrying amount 31 Dec 2015
Subsidiaries						
EMEA	Cold Drawn Products Ltd	2 874	-	-	176	3 050
EMEA	Combustion - heating	3 027	-	-	-	3 027
EMEA	Building Products	71	-	-	-	71
EMEA	Rubber Reinforcement	713	3 542	-	-	4 255
North America	Orrville plant (USA)	9 662	-	-	1 112	10 774
Latin America	Inchalam group	860	-	-	-40	820
Latin America	Bekaert Ideal SL companies	844	-	-	-	844
Asia Pacific	Bekaert (Qingdao) Wire Products Co Ltd	385	-	-	-	385
Asia Pacific	Bekaert-Jiangyin Wire Products Co Ltd	47	-	-	-	47
BBRG	BBRG	-	13 160	-	-734	12 426
Subtotal		18 483	16 702	-	514	35 699
Joint ventures and associates						
Latin America	Belgo Bekaert Arames Ltda	4 667	-	-	-1 181	3 486
Subtotal		4 667	-	-	-1 181	3 486
Total		23 150	16 702	-	-667	39 185

Segment in thousands of €	Group of cash-generating units	Carrying amount			Exchange differences	Carrying amount
		1 Jan 2016	Increases	Impairments		
Subsidiaries						
EMEA	Cold Drawn Products Ltd	3 050	-	-	-435	2 615
EMEA	Combustion - heating	3 027	-	-	-	3 027
EMEA	Building Products	71	-	-	-	71
EMEA	Rubber Reinforcement	4 255	-	-	-	4 255
North America	Orrville plant (USA)	10 774	-	-	354	11 128
Latin America	Inchalam group	820	-	-	79	899
Latin America	Bekaert Ideal SL companies	844	-	-	-	844
Asia Pacific	Bekaert (Qingdao) Wire Products Co Ltd	385	-	-	-	385
Asia Pacific	Bekaert-Jiangyin Wire Products Co Ltd	47	-	-	-	47
BBRG	BBRG	12 426	116 245	-	403	129 074
Subtotal		35 699	116 245	-	401	152 345
Joint ventures and associates						
Latin America	Belgo Bekaert Arames Ltda	3 486	-	-	895	4 381
Subtotal		3 486	-	-	895	4 381
Total		39 185	116 245	-	1 296	156 726

In relation to the impairment testing of goodwill arising from the BBRG business combination, the following model characteristics have been used:

- a 6-year forecast timeframe of cash flows (in line with the latest business plan update), followed by a terminal value assumption based on a nominal perpetual growth rate of 2%, which mainly is based on a conservative industrial GDP evolution assumption;
- the cash flows reflect the evolution taking into account agreed action plans and are based on the assets in their current condition, without including the impacts of future restructuring not yet committed;
- only capital expenditure required to maintain the assets in good working order are included; future capital expenditures improving or enhancing the assets in excess of their originally assessed standard of performance are not considered;
- no cost structure improvements are taken into account unless they can be substantiated; and
- the cash outflows relating to working capital are calculated as a percentage of incremental sales based on the past performance of BBRG.

For the testing of goodwill arising from earlier transactions, the model as used in previous years has been maintained and updated to the latest business insights. The main differences to the model used in the BBRG case, are:

- a 12-year time horizon, reflecting the average lifetime of equipment;
- a terminal value assumption based on the net book value of the capital employed at the end of the 12-year time horizon.

The latter model tends to be more conservative and is less commonly used. The use of the model was continued given the fact that the amount of goodwill being tested was rather immaterial in the various cases. For uniformity reasons, the same model as used for the BBRG case will be used in future for all goodwill impairment tests.

The discount factor for all tests is based on a (long-term) pre-tax cost of capital, the risks being implicit in the cash flows. A weighted average cost of capital (WACC) is determined for euro, US dollar and Chinese renminbi regions. For countries or businesses with a higher perceived risk, the WACC is raised with a country or business specific risk factor. In the case of BBRG, a specific equity risk premium of 1% has been considered as appropriately reflecting the specific business context compared to the general Group business context. The WACC is pre-tax based, since relevant cash flows are also pre-tax based. In determining the weight of the cost of debt vs. the cost of equity, a target gearing (net debt relative to equity) of 50% is used. For cash flow models stated in real terms (without inflation), the nominal WACC is adjusted for the expected inflation rate. For cash flow models in nominal terms, the nominal WACC is used. All parameters used for the calculation of the discount factors are reviewed at least annually.

Discount rates for impairment testing		EUR region	USD region	CNY region
Group target ratio's				
Gearing: net debt/equity	50%			
% debt	33%			
% equity	67%			
% LT debt	75%			
% ST debt	25%			
Cost of Bekaert debt				
Long term interest rate		2.4%	3.3%	6.0%
Short term interest rate		1.2%	1.7%	5.4%
Cost of Bekaert equity (post tax)				
	$= R_f + \beta \cdot E_m$	8.2%	9.7%	12.4%
Risk free rate= R_f		0.7%	2.1%	4.9%
Beta = β	1.2			
Market equity risk premium= E_m	6.3%			
Corporate tax rate				
	27%			
Cost of Bekaert equity before tax				
		11.3%	13.2%	17.1%
Bekaert WACC - nominal				
Expected inflation		1.6%	1.8%	2.0%
Bekaert WACC in real terms				
		6.8%	8.1%	11.3%

Based on current knowledge, reasonable changes in key assumptions (including discount rate, sales and margin evolution) would not generate impairments for any of the cash-generating units for which goodwill has been allocated.

Current headroom for impairment of the BBRG goodwill, i.e. the excess of the recoverable amount over the carrying amount of the BBRG CGU, is estimated at € 335 million. Sensitivity analyses performed for reasonable changes in the key assumptions pointed out that the headroom for impairment would be consumed if:

- EBITDA would fall below 80% of the current business plan while the discount rate would increase by 2% at the same time, keeping the perpetual growth rate constant.
- The perpetual growth rate would fall to zero while the discount rate would increase by 4%, keeping planned EBITDA levels within the planning horizon.

6.3. Property, plant and equipment

Cost in thousands of €	Land and buildings	Plant, machinery and equipment	Furniture and vehicles	Finance leases	Other PP&E	Assets under construc- tion	Total
As at 1 January 2015	1 049 850	2 395 062	94 418	9 738	6 129	90 339	3 645 537
Expenditure	31 088	125 478	7 584	2 319	2 156	4 606	173 231
Disposals and retirements	-15 242	-16 486	-8 389	-	-434	-2	-40 553
New consolidations	48 939	30 210	1 573	-	-	343	81 065
Deconsolidations	-18 299	-30 680	-1 513	-	-750	-5 638	-56 880
Transfers ¹	-	-	-	-	-	-7 857	-7 857
Exchange gains and losses (-)	27 546	108 619	3 250	-356	108	3 510	142 677
Inflation effects on opening balances	1 952	2 326	237	-	-	7	4 522
Other inflation effects	-	-	-	-	-	45	45
As at 31 December 2015	1 125 834	2 614 529	97 160	11 701	7 209	85 354	3 941 787
As at 1 January 2016	1 125 834	2 614 529	97 160	11 701	7 209	85 354	3 941 787
Expenditure	18 176	80 984	8 728	47	1 994	50 226	160 155
Disposals and retirements	-853	-31 706	-3 806	-35	-56	-	-36 456
New consolidations	22 652	69 286	483	33	-	1 788	94 242
Transfers ¹	-	-	-	-	-	-1	-1
Reclassification to (-) / from held for sale	-44 775	-11 032	-412	-	-	-969	-57 188
Exchange gains and losses (-)	8 405	-13 398	-198	737	-98	3 376	-1 176
Inflation effects on opening balances	1 996	2 388	255	-	-	55	4 694
Other inflation effects	-	-	-	-	-	-6	-6
As at 31 December 2016	1 131 435	2 711 051	102 210	12 483	9 049	139 823	4 106 051
Accumulated depreciation and impairment							
As at 1 January 2015	445 691	1 663 470	79 156	1 686	3 354	-	2 193 357
Charge for the year	42 002	141 470	7 531	340	433	-	191 776
Impairment losses	2 064	10 750	132	-	-	-	12 946
Reversal impairment losses and depreciations	-29	-1 520	-99	-	-	-	-1 648
Disposals and retirements	-13 556	-16 855	-7 800	-	-64	-	-38 275
Transfers	47	-60	16	-	-2	-	-
Deconsolidations	-3 708	-14 738	-1 229	-	-145	-	-19 820
Exchange gains (-) and losses	19 591	78 299	2 800	-23	69	-	100 736
Inflation effects on opening balances	539	1 243	207	-	-	-	1 989
As at 31 December 2015	492 641	1 862 059	80 714	2 003	3 645	-	2 441 061
As at 1 January 2016	492 641	1 862 059	80 714	2 003	3 645	-	2 441 061
Charge for the year	43 120	141 781	7 129	451	450	-	192 931
Impairment losses	11 906	7 412	133	-	-	-	19 451
Reversal impairment losses and depreciations	5	-2 067	59	-27	-	-	-2 030
Disposals and retirements	-448	-30 107	-3 659	-35	-10	-	-34 259
Reclassification to (-) / from held for sale	-20 808	-3 331	-169	-	-	-	-24 308
Exchange gains (-) and losses	-187	-13 381	-503	-37	-84	-	-14 192
Inflation effects on opening balances	626	1 452	220	-	-	-	2 298
As at 31 December 2016	526 855	1 963 818	83 924	2 355	4 001	-	2 580 952

¹ Total transfers equal zero when aggregating the balances of 'Intangible assets' (see note 6.1.) and 'Property, plant and equipment'.

in thousands of €	Land and buildings	Plant, machinery and equipment	Furniture and vehicles	Finance leases	Other PP&E	Assets under construction	Total
Carrying amount as at 31 December 2015 before investment grants and reclassification of leases	633 193	752 470	16 447	9 698	3 564	85 354	1 500 726
Net investment grants	-7 739	-2 535	-	-	-	-	-10 274
Finance leases by asset category	7 314	2 308	76	-9 698	-	-	-
Carrying amount as at 31 December 2015	632 768	752 243	16 523	-	3 564	85 354	1 490 452
Carrying amount as at 31 December 2016 before investment grants and reclassification of leases	604 580	747 233	18 287	10 128	5 048	139 823	1 525 099
Net investment grants	-7 050	-2 201	-	-	-	-1 134	-10 385
Finance leases by asset category	7 822	2 185	120	-10 128	-	-	-
Carrying amount as at 31 December 2016	605 352	747 217	18 407	-	5 048	138 689	1 514 714

The investment programs in Belgium, Chile, China, Indonesia, Romania, Slovakia and United States accounted for most of the expenditure. The net exchange gain for the year mainly relates to assets denominated in Chinese renminbi (€ -19.3 million), Chilean pesos (€ 9.1 million), US dollar (€ 12.3 million) and Brazilian real (€ 9.9 million).

The methodology for impairment testing is consistent with the one presented in note 6.2. 'Goodwill'. For new consolidations and deconsolidations, please refer to note 7.2. 'Effect of business combinations'. The new consolidations mainly relate to the merger with Bridon.

Additional information relating to the reclassification to held for sale is provided under note 6.11. 'Assets classified as held for sale and liabilities associated with those assets'. Inflation effects relate to the application of inflation accounting in Venezuela.

No items of PP&E are pledged as securities.

6.4. Investments in joint ventures and associates

The Group has no investments in entities qualified as associates.

Investments excluding related goodwill

Carrying amount in thousands of €	2015	2016
As at 1 January	151 067	110 633
Result for the year	18 320	25 445
Dividends	-18 682	-22 732
Exchange gains and losses	-34 660	28 814
Deconsolidations	-5 382	-
Other comprehensive income	-30	41
As at 31 December	110 633	142 201

In comparison with 2015, the better results for 2016 are mainly driven by the deconsolidation of the loss-making Xinyu entities. For an analysis of the result for the year, please refer to note 5.6. 'Share in the results of joint ventures and associates'.

Exchange gains and losses relate mainly to the substantial swing in closing rates of the Brazilian real (3.4 in 2016 vs 4.3 in 2015).

Deconsolidations in 2015 relate to the loss of significant influence in Bekaert (Xinyu) New Materials Co Ltd and Bekaert Xinyu Metal Products Co Ltd and to the step acquisition of BOSFA Pty Ltd.

Related goodwill

Cost in thousands of €	2015	2016
As at 1 January	4 667	3 486
Exchange gains and losses	-1 181	895
As at 31 December	3 486	4 381
Carrying amount of related goodwill as at 31 December	3 486	4 381
Total carrying amount of investments in joint ventures as at 31 December	114 119	146 582

The Group's share in the equity of joint ventures is analysed as follows:

in thousands of €	2015	2016	
Joint ventures			
Belgo Bekaert Arames Ltda	Brazil	98 621	125 228
BMB-Belgo Mineira Bekaert Artefatos de Arame Ltda	Brazil	12 012	16 973
Total for joint ventures excluding related goodwill		110 633	142 201
Carrying amount of related goodwill		3 486	4 381
Total for joint ventures including related goodwill		114 119	146 582

No major contingent assets relating to joint ventures have been identified at the balance sheet date. The main contingent liabilities identified at the balance sheet date relate to taxes at Belgo Bekaert Arames Ltda and BMB-Belgo Mineira Bekaert Artefatos de Arame Ltda. These Brazilian joint ventures have been trying to compensate ICMS tax receivables with a total carrying amount of € 4.7 million (2015: € 6.6 million). They also have been facing claims relating to ICMS credits totaling € 22.1 million (2015: € 9.0 million) and several other tax claims, most of which date back several years, for a total nominal amount of € 15.3 million (2015: € 12.9 million). Evidently, any potential losses resulting from the above-mentioned contingencies would only affect the Group to the extent of their interest in the joint ventures involved (i.e. 45%). At the balance sheet date, the Group has no unrecognized commitments for any of its joint ventures (2015: none) that might give rise to a future outflow of cash or other resources.

In accordance with IFRS 12, 'Disclosures of Interests in Other Entities', following information is provided on material joint ventures. The two Brazilian joint ventures have been aggregated in order to emphasize the predominance of the partnership with ArcelorMittal when analyzing the relative importance of the joint ventures.

Name of joint venture in thousands of €	Country	Proportion of ownership interest (and voting rights) held by the Group at year-end	
		2015	2016
Belgo Bekaert Arames Ltda	Brazil	45.0% (50.0%)	45.0% (50.0%)
BMB-Belgo Mineira Bekaert Artefatos de Arame Ltda	Brazil	44.5% (50.0%)	44.5% (50.0%)

Belgo Bekaert Arames Ltda manufactures and sells a wide variety of wire products mostly for industrial customers, and BMB manufactures and sells mainly wires and cables for rubber reinforcement in tires.

Brazilian joint ventures: income statement in thousands of €	2015	2016
Sales	709 597	661 718
Operating result (EBIT)	79 665	74 541
Interest income	3 998	4 107
Interest expense	-6 447	-3 560
Other financial income and expenses	-5 899	-961
Income taxes	-9 391	-10 449
Result for the period	61 926	63 678
Other comprehensive income for the period	-73	89
Total comprehensive income for the period	61 853	63 767
Depreciation and amortization	18 084	20 280
EBITDA	97 749	94 821
Dividends received from the entity	18 682	22 732

Brazilian joint ventures: balance sheet in thousands of €	2015	2016
Current assets	184 355	243 364
Non-current assets	172 056	209 986
Current liabilities	-84 319	-104 001
Non-current liabilities	-27 363	-34 400
Net assets	244 729	314 949

Brazilian joint ventures: net debt elements in thousands of €	2015	2016
Non-current interest-bearing debt	-	-
Current interest-bearing debt ¹	14 930	11 726
Total financial debt	14 930	11 726
Non-current financial receivables and cash guarantees	-83	-23 521
Current loans	-	-2
Cash and cash equivalents	-13 700	-14 809
Net debt	1 147	-26 606

¹ See note 2.7. 'Restatement and reclassification effects'.

Brazilian joint ventures: reconciliation with carrying amount

in thousands of €

	2015	2016
Net assets of Belgo Bekaert Arames Ltda	218 323	277 404
Proportion of the Group's ownership interest	45.0%	45.0%
Proportionate net assets	98 245	124 832
Consolidation adjustments	377	397
Carrying amount of the Group's interest in Belgo Bekaert Arames Ltda	98 622	125 229
Net assets of BMB-Belgo Mineira Bekaert Artefatos de Arame Ltda	26 406	37 544
Proportion of the Group's ownership interest	44.5%	44.5%
Proportionate net assets	11 751	16 707
Consolidation adjustments	261	265
Carrying amount of the Group's interest in BMB-Belgo Mineira Bekaert Artefatos de Arame Ltda	12 012	16 972
Carrying amount of the Group's interest in the Brazilian joint ventures	110 634	142 201

Aggregate information of the other joint ventures

in thousands of €

	2015	2016
The Group's share in the result from continuing operations	-5 948	-
The Group's share of total comprehensive income	-5 948	-
Aggregate carrying amount of the Group's interests in these joint ventures	-	-

6.5. Other non-current assets

in thousands of €	2015	2016
Non-current financial receivables and cash guarantees	9 694	6 664
Reimbursement rights and other non-current amounts receivable	8 549	7 937
Derivatives (cf. note 7.3.)	5 897	-
Overfunded employee benefit plans - non-current	7	42
Available-for-sale financial assets	15 626	17 499
Total other non-current assets	39 773	32 142

Available-for-sale financial assets - non-current

Carrying amount in thousands of €	2015	2016
As at 1 January	9 979	15 626
Expenditure	100	41
Disposals	-123	-3
Fair value changes	-2 001	2 349
Impairment losses	-302	-591
New consolidations	-	3
Reclassifications	8 007	-
Exchange gains and losses	-34	74
As at 31 December	15 626	17 499

The available-for-sale financial assets mainly consist of the investments in:

- Shougang Concord Century Holdings Ltd, a Hong Kong Stock Exchange listed company. On this investment, an impairment loss of € 0.6 million has been recognized through income statement as well as an increase in fair value (€ 2.3 million) recognized through equity during the year in accordance with IAS 39, 'Financial Instruments: Recognition and Measurement'.
- Bekaert (Xinyu) New Materials Co Ltd and Bekaert Xinyu Metal Products Co Ltd.
- Transportes Puelche Ltda, an investment held by Acma SA (Chile).

The amount reported as expenditure mainly relates to Transportes Puelche Ltda.

6.6. Deferred tax assets and liabilities

Carrying amount in thousands of €	Assets		Liabilities	
	2015	2016	2015	2016
As at 1 January ¹	102 977	132 494	54 253	53 213
Increase or decrease via income statement ¹	27 010	18 436	10 017	-12 516
Increase or decrease via OCI ¹	-670	-737	-	-
New consolidations	8 174	9 480	292	22 861
Deconsolidations	-291	-	-	-
Reclassification as held for sale	-	-449	-	-4 486
Exchange gains and losses ¹	2 723	1 010	-3 920	3 350
Change in set-off of assets and liabilities	-7 429	-9 866	-7 429	-9 866
As at 31 December	132 494	150 368	53 213	52 556

¹ See note 2.7. 'Restatement and reclassification effects':

- Opening balance: € 1.7 million
- Increase via income statement: € 0.1 million
- Decrease via OCI: € -0.7 million
- Exchange gains and losses: € 0.2 million
- Closing balance: € 1.3 million

Recognized deferred tax assets and liabilities

Deferred tax assets and liabilities are attributable to the following items:

in thousands of €	Assets		Liabilities		Net assets	
	2015	2016	2015	2016	2015	2016
Intangible assets	7 550	45 407	6 845	11 718	705	33 689
Property, plant and equipment	45 486	45 349	44 638	51 385	848	-6 036
Financial assets	7	11	24 804	16 484	-24 797	-16 473
Inventories	10 726	10 517	2 980	4 003	7 746	6 514
Receivables	9 296	10 470	3 769	264	5 527	10 206
Other current assets	977	267	3 428	3 623	-2 451	-3 356
Employee benefit obligations ¹	26 975	29 582	105	144	26 870	29 438
Other provisions	5 921	7 160	5 959	677	-38	6 483
Other liabilities	14 180	13 137	8 395	21 835	5 785	-8 698
Tax deductible losses carried forward, tax credits and recoverable income taxes	59 086	46 045	-	-	59 086	46 045
Tax assets / liabilities	180 204	207 945	100 923	110 133	79 281	97 812
Set-off of assets and liabilities	-47 710	-57 577	-47 710	-57 577	-	-
Net tax assets / liabilities	132 494	150 368	53 213	52 556	79 281	97 812

¹ See note 2.7. 'Restatement and reclassification effects'.

The deferred taxes on property, plant and equipment mainly relate to differences in useful lives between IFRS and tax books, whereas the deferred taxes on intangible assets are mainly generated by intercompany gains which have been eliminated in the consolidated statements. The deferred tax liabilities on financial assets mainly relate to temporary differences arising from undistributed profits from subsidiaries and joint ventures.

Movements in deferred tax assets and liabilities arise from the following:

2015 in thousands of €	As at 1 January	Recognized via income statement	Recognized via OCI	Acquisitions and disposals ²	Reclassifi- cations	Exchange gains and losses	As at 31 December
Temporary differences							
Intangible assets	1 543	-178	-	-3	-	-657	705
Property, plant and equipment	-7 984	-3 173	-	6 485	-	5 520	848
Financial assets	-16 064	-9 149	-67	-	-	483	-24 797
Inventories	5 582	4 429	-	-1 666	-	-599	7 746
Receivables	7 811	-2 627	-	-3	-	346	5 527
Other current assets	-8 034	5 663	-	31	-	-111	-2 451
Employee benefit obligations ¹	30 892	-6 250	-603	1 496	-	1 335	26 870
Other provisions	1 800	-2 631	-	553	-	240	-38
Other liabilities	11 308	-5 750	-	351	-	-124	5 785
Tax deductible losses carried forward, tax credits and recoverable income taxes	21 870	36 659	-	347	-	210	59 086
Total	48 724	16 993	-670	7 591	-	6 643	79 281

2016 in thousands of €	As at 1 January	Recognized via income statement	Recognized via OCI	Acquisitions and disposals ²	Reclassifi- cations ³	Exchange gains and losses	As at 31 December
Temporary differences							
Intangible assets	705	41 579	-	-9 255	-	660	33 689
Property, plant and equipment	848	3 319	-	-10 793	4 393	-3 803	-6 036
Financial assets	-24 797	9 019	-	-523	87	-259	-16 473
Inventories	7 746	311	-	-1 347	-	-196	6 514
Receivables	5 527	4 756	-	41	-	-118	10 206
Other current assets	-2 451	-905	-	-20	-	20	-3 356
Employee benefit obligations	26 870	93	-601	2 534	-	542	29 438
Other provisions	-38	4 735	-	1 626	-	160	6 483
Other liabilities	5 785	-14 265	-136	390	-443	-29	-8 698
Tax deductible losses carried forward, tax credits and recoverable income taxes	59 086	-17 690	-	3 966	-	683	46 045
Total	79 281	30 952	-737	-13 381	4 037	-2 340	97 812

¹ See note 2.7. 'Restatement and reclassification effects'.

² Relates in 2016 to the business combinations as disclosed in note 7.2. 'Effect of business combinations'. In 2015, it relates to the acquisition of Pirelli's steel cord plants, the acquisition of Arrium's ropes business in Australia, the step acquisition of BOSFA Pty Ltd in Australia and the disposal of the Carding Solutions activities to Groz-Beckert.

³ See note 6.11. 'Assets classified as held for sale and liabilities associated with those assets'.

Deferred taxes related to other comprehensive income (OCI)

2015 in thousands of €	Before tax	Tax impact	After tax
Exchange differences ¹	-16 682	-	-16 682
Inflation adjustments	1 208	-	1 208
Cash flow hedges	175	-67	108
Available-for-sale investments	-2 001	-	-2 001
Remeasurement gains and losses on defined-benefit plans ¹	14 473	-603	13 870
Share of OCI of joint ventures and associates	-30	-	-30
Total	-2 857	-670	-3 527

2016 in thousands of €	Before tax	Tax impact	After tax
Exchange differences	36 837	-	36 837
Inflation adjustments	1 483	-	1 483
Cash flow hedges	742	-136	606
Available-for-sale investments	2 349	-	2 349
Remeasurement gains and losses on defined-benefit plans	-9 978	-601	-10 579
Share of OCI of joint ventures and associates	40	-	40
Total	31 473	-737	30 736

¹ See note 2.7. 'Restatement and reclassification effects'.

Unrecognized deferred tax assets

Deferred tax assets have not been recognized in respect of the following deductible items (gross amounts):

in thousands of €	2015	2016	Variance
Deductible temporary differences	298 863	295 937	-2 926
Capital losses	26 627	23 534	-3 093
Trade losses	658 063	714 552	56 489
Tax credits	50 866	47 551	-3 315
Total	1 034 419	1 081 574	47 155

Capital losses, trade losses and tax credits by expiry date

The below table shows expiry date for all items (recognized and unrecognized).

2015 in thousands of €	Expiring within 1 year	Expiring between 1 and 5 years	Expiring after more than 5 years	Not expiring	Total
Capital losses	-	-	-	26 627	26 627
Trade losses	13 673	154 015	71 946	604 398	844 032
Tax credits	-	57 052	-	35 942	92 994
Total	13 673	211 067	71 946	666 967	963 653

2016 in thousands of €	Expiring within 1 year	Expiring between 1 and 5 years	Expiring after more than 5 years	Not expiring	Total
Capital losses	-	-	-	23 534	23 534
Trade losses	45 281	100 416	50 864	692 349	888 910
Tax credits	-	56 856	-	10 781	67 637
Total	45 281	157 272	50 864	726 664	980 081

6.7. Operating working capital

in thousands of €	2015	2016
<i>Raw materials, consumables and spare parts</i>	199 091	229 894
<i>Work in progress and finished goods</i>	323 451	384 359
<i>Goods purchased for resale</i>	106 189	110 247
Inventories	628 731	724 500
Trade receivables	686 364	739 145
Bills of exchange received	68 005	60 182
Advances paid	15 126	19 531
Trade payables	-456 783	-556 361
Advances received	-3 137	-12 732
Remuneration and social security payables	-117 532	-123 559
Employment-related taxes	-8 016	-8 198
Operating working capital	812 758	842 508

Carrying amount in thousands of €	2015	2016
As at 1 January	974 611	812 758
Organic increase or decrease	-212 266	-16 336
Write-downs and write-down reversals	-8 281	1 175
New consolidations	58 899	52 003
Deconsolidations	-8 465	-
Impact inflation accounting	1 241	2 361
Reclassification to (-) / from assets held for sale	-	-26 347
Exchange gains and losses (-)	7 019	16 894
As at 31 December	812 758	842 508

Weighted average operating working capital represented 22.6% of sales (2015: 24.8%).

Additional information is as follows:

- Inventories

The cost of sales includes expenses related to transport and handling of finished goods amounting to € 159.3 million (2015: € 165.9 million), which have never been capitalized in inventories. Movements in inventories include net reversals of write-downs in 2016 of € 5.1 million (2015: net write-downs of € 6.8 million).

Similar as in 2015, in 2016 no inventories were pledged as security for liabilities.

- Trade receivables

The following table presents the movements in the allowance for bad debt:

Allowance for bad debt in thousands of €	2015	2016
As at 1 January	-41 767	-45 076
Losses recognized in current year	-8 614	-8 287
Losses recognized in prior years - amounts used	4 140	1 787
Losses recognized in prior years - reversal of amounts not used	3 013	2 391
Deconsolidations	52	-
Reclassification to / from (-) assets held for sale	-	849
Exchange gains and losses (-)	-1 900	534
As at 31 December	-45 076	-47 802

More information about allowances and past-due receivables is provided in the following table:

Trade receivables and bills of exchange received in thousands of €	2015	2016
Gross amount	799 445	847 129
Allowance for bad debts (impaired)	-45 076	-47 802
Net carrying amount	754 369	799 327
<i>of which past due but not impaired</i>		
<i>amount</i>	93 097	95 844
<i>average number of days outstanding</i>	106	78

Regarding trade receivables that are neither impaired nor past due, there are no indications that the debtors will not meet their payment obligations. For more information on credit enhancement techniques, refer to note 7.3. 'Financial risk management and financial derivatives'.

6.8. Other receivables

Carrying amount in thousands of €	2015	2016
As at 1 January	106 627	99 286
Increase or decrease	-12 483	14 072
Write-downs and write-down reversals	1 556	8
New consolidations	3 219	4 261
Deconsolidations	-3 165	-
Reclassifications	-	-11 613
Exchange gains and losses	3 532	2 470
As at 31 December	99 286	108 484

Other receivables mainly relates to income taxes (€ 40.1 million (2015: € 40.3 million)), VAT and other non-income taxes (€ 55.5 million (2015: € 49.7 million)) and social loans to employees (€ 2.2 million (2015: € 3.0 million)).

6.9. Cash & cash equivalents and short-term deposits

Carrying amount in thousands of €	2015	2016
Cash & cash equivalents	401 771	365 546
Short-term deposits	10 216	5 342

For the changes in cash & cash equivalents, please refer to the consolidated cash flow statement and to note 7.1. 'Notes to the cash flow statement'. Cash equivalents and short-term deposits do not include any listed securities or equity instruments at the balance sheet date and are all classified as loans and receivables.

6.10. Other current assets

Carrying amount in thousands of €	2015	2016
Current loans and receivables ¹	34 773	13 991
Advances paid	15 126	19 531
Derivatives (cf. note 7.3.)	9 747	7 037
Deferred charges and accrued income ¹	6 403	11 665
As at 31 December	66 049	52 225

¹ See note 2.7. 'Restatement and reclassification effects'.

The current loans and receivables mainly relate to loans to partners in China (€ 10.4 million) and to various cash guarantees (€ 3.0 million).

6.11. Assets classified as held for sale and liabilities associated with those assets

Carrying amount		
in thousands of €	2015	2016
As at 1 January	-	-
Increases and decreases (-)	-	100 848
Exchange gains and losses	-	11 513
As at 31 December	-	112 361
in thousands of €	2015	2016
Intangible assets	-	9 939
Property, plant and equipment	-	36 674
Other non-current assets	-	5 651
Deferred tax assets	-	505
Inventories	-	10 140
Trade receivables	-	27 880
Other receivables	-	13 326
Cash and cash equivalents	-	8 241
Other current assets	-	5
Total assets classified as held for sale	-	112 361
Employee benefit obligations - non-current	-	33
Provisions non-current	-	6 444
Interest-bearing debt non-current	-	551
Deferred tax liabilities	-	5 045
Interest-bearing debt current	-	662
Trade payables	-	7 117
Employee benefit obligations - current	-	1 240
Income taxes payables	-	10 705
Other current liabilities	-	1 703
Total liabilities associated with assets classified as held for sale	-	33 500

Bekaert is in ongoing discussions with ArcelorMittal to bring the Sumaré plant into a similar joint venture structure as the rest of the operations in Brazil. Negotiations are expected to be finalized in 2017. Other movements mainly relate to rights to use land of Bekaert (Huizhou) Steel Cord Co Ltd.

The cumulative translation adjustments relating to Bekaert Sumaré Ltda amount to € -0.3 million at the balance sheet date.

6.12. Ordinary shares, treasury shares and equity settled share based payments

Issued capital in thousands of €		2015		2016	
		Nominal value	Number of shares	Nominal value	Number of shares
1	As at 1 January	176 914	60 111 405	176 957	60 125 525
	Movements in the year				
	Issue of new shares	43	14 120	655	222 000
	As at 31 December	176 957	60 125 525	177 612	60 347 525
2	Structure				
2.1	Classes of ordinary shares				
	Ordinary shares without par value	176 957	60 125 525	177 612	60 347 525
2.2	Registered shares		148 202		207 619
	Non-material shares		59 977 323		60 139 906
	Authorized capital not issued	152 175		176 000	

A total of 222 000 subscription rights were exercised under the Company's SOP 2005-2009 stock option plan in 2016, requiring the issue of a total of 222 000 new shares of the Company.

From the 4 248 710 treasury shares held as of 31 December 2015, the Company disposed of 392 049 shares in connection with share-based payment plans. A total of 28 785 of treasury shares were purchased. No treasury shares were cancelled in 2016. As a result, the Company held an aggregate 3 885 446 treasury shares as of 31 December 2016.

Stock option plans

Details of the stock option plans which showed an outstanding balance either at the balance sheet date or at the previous balance sheet date, are as follows:

Overview of SOP1 Stock Option Plan

Date offered	Date granted	Date of issue of subscription rights	Exercise price (in €)	Number of subscription rights			Out-standing	First exercise period	Last exercise period
				Granted	Exercised	Forfeited			
12.07.2002	10.09.2002	25.09.2002	15.825	106 152	105 432	720	-	22.05 - 30.06.2006	22.05 - 15.06.2015
				106 152	105 432	720	-		

Overview of SOP2 Stock Option Plan

Date offered	Date granted	Exercise price (in €)	Number of options			Out-standing	First exercise period	Last exercise period
			Granted	Exercised	Forfeited			
21.12.2006	19.02.2007	30.175	37 500	27 500	-	10 000	22.05 - 30.06.2010	15.11 - 15.12.2021
20.12.2007	18.02.2008	28.335	12 870	12 870	-	-	22.05 - 30.06.2011	15.11 - 15.12.2017
20.12.2007	18.02.2008	28.335	30 630	11 310	-	19 320	22.05 - 30.06.2011	15.11 - 15.12.2022
18.12.2008	16.02.2009	16.660	64 500	50 500	-	14 000	22.05 - 30.06.2012	15.11 - 15.12.2018
17.12.2009	15.02.2010	33.990	49 500	5 000	-	44 500	22.05 - 30.06.2013	15.11 - 15.12.2019
			195 000	107 180	-	87 820		

Overview of SOP 2005-2009 Stock Option Plan

Date offered	Date granted	Date of issue of subscription rights	Exercise price (in €)	Number of subscription rights				Out-standing	First exercise period	Last exercise period
				Granted	Exercised	Forfeited				
22.12.2005	20.02.2006	22.03.2006	23.795	190 698	182 967	15	7 716	22.05 - 30.06.2009	15.11 - 15.12.2020	
21.12.2006	19.02.2007	22.03.2007	30.175	153 810	144 240	600	8 970	22.05 - 30.06.2010	15.11 - 15.12.2021	
20.12.2007	18.02.2008	22.04.2008	28.335	14 100	3 200	9 900	1 000	22.05 - 30.06.2011	15.11 - 15.12.2017	
20.12.2007	18.02.2008	22.04.2008	28.335	215 100	141 250	12 700	61 150	22.05 - 30.06.2011	15.11 - 15.12.2022	
18.12.2008	16.02.2009	20.10.2009	16.660	288 150	229 550	19 500	39 100	22.05 - 30.06.2012	15.11 - 15.12.2018	
17.12.2009	15.02.2010	08.09.2010	33.990	225 450	56 400	52 500	116 550	22.05 - 30.06.2013	15.11 - 15.12.2019	
				1 087 308	757 607	95 215	234 486			

Overview of SOP 2010-2014 Stock Option Plan

Date offered	Date granted	Exercise price (in €)	Number of options				Out-standing	First exercise period	Last exercise period
			Granted	Exercised	Forfeited				
16.12.2010	14.02.2011	77.000	360 925	-	65 200	295 725	28.02 - 13.04.2014	Mid Nov. - 15.12.2020	
22.12.2011	20.02.2012	25.140	287 800	166 900	2 600	118 300	27.02 - 12.04.2015	Mid Nov. - 21.12.2021	
20.12.2012	18.02.2013	19.200	267 200	175 442	2 700	89 058	End Feb. - 10.04.2016	Mid Nov. - 19.12.2022	
29.03.2013	28.05.2013	21.450	260 000	-	-	260 000	End Feb. - 09.04.2017	End Feb. - 28.03.2023	
19.12.2013	17.02.2014	25.380	373 450	-	2 400	371 050	End Feb. - 09.04.2017	Mid Nov. - 18.12.2023	
18.12.2014	16.02.2015	26.055	349 810	-	2 100	347 710	End Feb. - 08.04.2018	Mid Nov. - 17.12.2024	
			1 899 185	342 342	75 000	1 481 843			

Overview of SOP 2015-2017 Stock Option Plan

Date offered	Date granted	Exercise price (in €)	Number of options				Out-standing	First exercise period	Last exercise period
			Granted	Exercised	Forfeited				
17.12.2015	15.02.2016	26.375	227 250	-	-	227 250	End Feb. - 07.04.2019	Mid Nov. - 16.12.2025	
			227 250	-	-	227 250			

SOP1 Stock Option Plan	2015		2016	
	Number of subscription rights	Weighted average exercise price (in €)	Number of subscription rights	Weighted average exercise price (in €)
Outstanding as at 1 January	720	15.825	-	-
Exercised during the year	-720	15.825	-	-
Outstanding as at 31 December	-	-	-	-

SOP2 Stock Option Plan	2015		2016	
	Number of options	Weighted average exercise price (in €)	Number of options	Weighted average exercise price (in €)
Outstanding as at 1 January	143 500	25.166	143 500	25.166
Exercised during the year	-	-	-55 680	18.254
Outstanding as at 31 December	143 500	25.166	87 820	29.549

SOP 2005-2009 Stock Option Plan	2015		2016	
	Number of subscription rights	Weighted average exercise price (in €)	Number of subscription rights	Weighted average exercise price (in €)
Outstanding as at 1 January	489 386	26.720	456 486	26.710
Forfeited during the year	-19 500	33.873	-	-
Exercised during the year	-13 400	16.660	-222 000	24.164
Outstanding as at 31 December	456 486	26.710	234 486	29.120

SOP 2010-2014 Stock Option Plan	2015		2016	
	Number of options	Weighted average exercise price (in €)	Number of options	Weighted average exercise price (in €)
Outstanding as at 1 January	1 498 075	34.413	1 821 585	32.942
Granted during the year	349 810	26.055	-	-
Exercised during the year	-26 300	25.140	-316 042	21.843
Forfeited during the year	-	-	-23 700	67.259
Outstanding as at 31 December	1 821 585	32.942	1 481 843	34.760

SOP 2015-2017 Stock Option Plan	2015		2016	
	Number of options	Weighted average exercise price (in €)	Number of options	Weighted average exercise price (in €)
Granted during the year	-	-	227 250	26.375
Outstanding as at 31 December	-	-	227 250	26.375

Weighted average remaining contractual life in years	2015	2016
	SOP2	3.7
SOP 2005-2009	4.5	3.7
SOP 2010-2014	7.1	6.3
SOP 2015-2017	-	9.0

The weighted average share price at the date of exercise in 2016 was not applicable for the SOP1 subscription rights (2015: € 26.22), € 40.69 for the SOP2 options (2015: not applicable), € 39.45 for the SOP 2005-2009 subscription rights (2015: € 26.36) and € 35.42 for the SOP 2010-2014 options (2015: € 27.09). The exercise price of the subscription rights and options is equal to the lower of (i) the average closing price of the Company's share during the thirty days preceding the date of the offer, and (ii) the last closing price preceding the date of the offer. When subscription rights are exercised under the SOP1 or SOP 2005-2009 plan, equity is increased by the amount of the proceeds received. Under the terms of the SOP1 and SOP2 plans any subscription rights or options granted through 2004 were vested immediately.

Under the terms of the SOP 2010-2014 stock option plan, options to acquire existing Company shares have been offered to the members of the Bekaert Group Executive, the Senior Vice Presidents and senior executive personnel during the period 2010-2014. The grant dates of each offering were scheduled in the period 2011-2015. The exercise price of the SOP 2010-2014 options was determined in the same manner as in the previous plans. The vesting conditions of the SOP 2010-2014 grants, as well as of the SOP 2005-2009 grants and of the SOP2 grants beginning in 2006, are such that the subscription rights or options will be fully vested on 1 January of the fourth year after the date of the offer. In accordance with the Economic Recovery Act of 27 March 2009, the exercise period of the SOP2 options and SOP 2005-2009 subscription rights granted in 2006, 2007 and 2008 was extended by five years in favor of the persons who were plan beneficiaries and subject to Belgian income tax at the time such extension was offered. The incremental fair value granted as a result of this amounts to € 0.3 million.

The options granted under SOP2 and SOP 2010-2014 and the subscription rights granted under SOP 2005-2009 are recognized at fair value at grant date in accordance with IFRS 2 (see note 6.13. 'Retained earnings and other Group reserves'). The fair value of the options is determined using a binomial pricing model. Inputs and outcome of this pricing model are detailed below:

Pricing model details	Granted in	Granted in	Granted in
Stock option plan	February 2015	February 2016	February 2017 ¹
Inputs to the model			
Share price at grant date (in €)	25.65	27.25	39.39
Exercise price (in €)	26.06	26.38	39.43
Expected volatility	39%	39%	39%
Expected dividend yield	3%	3%	3%
Vesting period (years)	3	3	3
Contractual life (years)	10	10	10
Employee exit rate	3%	3%	3%
Risk-free interest rate	0.05%	0.05%	0.05%
Exercise factor	1.40	1.40	1.40
Outcome of the model			
Fair value (in €)	6.71	7.44	10.32
Granted options	349 810	227 250	273 325

¹ See note 7.6. 'Events after the balance sheet date'.

The model allows for the effects of early exercise through an exercise factor. An exercise factor of 1.40 stands for the assumption that the beneficiaries exercise the options and the subscription rights after the vesting date when the share price exceeds the exercise price by 40% (on average).

During 2016, 227 250 options (2015: 349 810) were granted under SOP 2015-2017 at a fair value per unit of € 7.44 (2015: € 6.71). The Group has recorded an expense against equity of € 3.3 million (2015: € 2.9 million) based on a straight-line amortization over the vesting period of the fair value of options and subscription rights granted.

Performance Share Plan

The members of the Bekaert Group Executive, the senior management and a limited number of management staff members of the Company and a number of its subsidiaries received during 2015 and 2016 Performance Share Units entitling the beneficiary to acquire Performance Shares subject to the conditions of the Performance Share Plan 2015-2017. These Performance Share Units will vest following a vesting period of three years, conditional to the achievement of a pre-set performance target. The performance target was set by the Board of Directors, in line with the Company strategy.

The Performance Share Units granted under the Performance Shares Plan 2015-2017 are recognized at fair value at grant date in accordance with IFRS 2 (see note 6.13. 'Retained earnings and other Group reserves'). The fair value of the options is determined using a binomial pricing model. Inputs and outcome of this pricing model are detailed below:

Pricing model details <i>Performance Share Plan</i>	Granted in				
	December 2015	February 2016	July 2016	December 2016 ¹	March 2017 ²
Inputs to the model					
Share price at grant date (in €)	27,25	32,00	38,38	39,49	46,90
Expected volatility	39%	39%	39%	39%	39%
Expected dividend yield	3%	3%	3%	3%	3%
Vesting period (years)	3	2,83	3	3	2,83
Employee exit rate	3%	3%	3%	3%	0%
Risk-free interest rate	-0,20%	-0,41%	-0,56%	-0,53%	-0,53%
Outcome of the model					
Fair value (in €)	36,08	46,89	50,30	52,15	46,90
Granted Performance Share Units	50 850	10 000	2 500	52 450	10 000

¹ Expense recorded as from 1 January 2017.

² See note 7.6. 'Events after the balance sheet date'.

In 2016 an offer of 52 450 Performance Share Units (2015: 50 850) was made under the terms of the Performance Share Plan 2015-2017. The granted units represent a fair value of € 2.7 million (2015: € 1.8 million). In addition, an exceptional grant of 10 000 Performance Share Units for the Chief Executive Officer was made on 29 February 2016 and an exceptional grant of 2 500 Performance Share Units for the newly hired Chief Financial Officer was made on 1 July 2016. The Group has recorded an expense against equity of € 0.8 million based on a straight-line amortization over the vesting period of the fair value of Performance Share Units granted.

Personal Shareholding Requirement Plan

In March 2016, the Company introduced a Personal Shareholding Requirement Plan for the Chief Executive Officer and the other members of the Bekaert Group Executive ('BGE'), pursuant to which they are required to build and maintain a personal shareholding in Company shares and whereby the acquisition of the required number of Company shares is supported by a so-called Company matching mechanism. The Company matching mechanism originally provided that the Company would match the BGE member's investment in Company shares in year x, with a premium (to be paid out at the end of year x + 2) which should then be used by the BGE member to invest in Company shares. On the motion of the Board of Directors and subject to the approval by the Extraordinary General Meeting of Shareholders of 29 March 2017, this Company matching mechanism will be amended (with retroactive effect as of the start of the Personal Shareholding Requirement Plan) in such a way that the Company will match the BGE member's investment in Company shares in year x, with a direct grant of a similar number of Company shares as acquired by the BGE member (such grant to be made at the end of year x + 2).

The matching shares to be granted under the Personal Shareholding Requirement Plan 2016 are recognized at fair value at start date in accordance with IFRS 2 (see note 6.13. 'Retained earnings and other Group reserves'). The fair value of the matching shares is determined using a binomial pricing model. Inputs and outcome of this pricing model are detailed below:

Pricing model details <i>Matching share</i>	To be granted in December 2018
Inputs to the model	
Share price at start date (in €)	35.71
Expected volatility	39%
Expected dividend yield	3%
Vesting period (years)	2.8
Employee exit rate	4%
Risk-free interest rate	-0.40%
Outcome of the model	
Fair value (in €)	29.27
Matching shares to be granted	20 327

A grant of 20 327 matching shares will be made in 2018 under the terms of the Personal Shareholding Requirement Plan 2016. The matching shares to be granted represent a fair value of € 0.6 million. The Group has recorded an expense against equity of € 0.2 million based on a straight-line amortization over the vesting period of the fair value of matching shares to be granted.

6.13. Retained earnings and other Group reserves

Carrying amount in thousands of €	2015	2016
<i>Hedging reserve</i>	-	-148
<i>Revaluation reserve for available-for-sale investments</i>	97	2 446
<i>Remeasurements on defined-benefit plans</i> ¹	-70 771	-80 743
<i>Other revaluation reserves</i>	-8 200	-8 206
<i>Deferred taxes booked in OCI</i> ¹	30 689	30 831
Other reserves ¹	-48 185	-55 820
Cumulative translation adjustments ¹	-30 808	4 286
Total other Group reserves	-78 993	-51 534
Treasury shares	-144 747	-127 974
Retained earnings	1 397 110	1 432 394

¹ See note 2.7. 'Restatement and reclassification effects'.

The movements in the Group reserves and retained earnings were as follows:

Hedging reserve in thousands of €	2015	2016
As at 1 January	132	-
Changes in ownership	-	-594
New instruments added	-	-213
Existing instruments settled	-	1 099
Recycled to income statement	-6 166	-325
Fair value changes to hedging instruments	6 034	-115
As at 31 December	-	-148
Of which		
<i>FX contracts (in Bridon International Ltd)</i>	-	-148

Changes in the fair value of hedging instruments designated as effective cash flow hedges are calculated and recognized directly in equity on a quarterly basis. In accordance with IFRSs hedge accounting policies for cash flow hedges, exchange gains or losses arising from translating the hedged items at the closing rate are offset by recycling the equivalent amounts to the income statement on a quarterly basis.

Revaluation reserve for available-for-sale investments in thousands of €	2015	2016
As at 1 January	2 098	97
Recycled to income statement	302	591
Fair value changes	-2 303	1 758
As at 31 December	97	2 446
Of which		
<i>Investment in Shougang Concord Century Holdings Ltd</i>	97	2 446

The revaluation of the investment in Shougang Concord Century Holdings Ltd is based on the closing price of the share on the Hong Kong Stock Exchange. At midyear 2016, an amount of € 0.6 million was recycled to income statement as a result of an impairment loss (€ 0.3 million at year-end 2015). The share price recovered substantially in the second semester 2016, which is reflected in the positive fair value changes.

Remeasurements on defined-benefit plans in thousands of €	2015	2016
As at 1 January (as reported)	-79 146	-70 771
Restatement ¹	-4 295	-
As at 1 January (restated)	-83 441	-70 771
Remeasurements of the period ¹	13 808	-9 615
Inflation effects	-430	-538
Changes in ownership	-708	181
As at 31 December	-70 771	-80 743

¹ See note 2.7. 'Restatement and reclassification effects'.

The remeasurements originate from using different actuarial assumptions in calculating the defined-benefit obligation and from differences with actual returns on plan assets at the balance sheet date (see note 6.15. 'Employee benefit obligations'). The opening balance of 2015 was restated for our Ecuadorian subsidiary as a result of the new IAS 19 requirement to use a currency based discount rate rather than a country based one. This reserve does not include any remeasurements attributable to non-controlling interests.

As for the 'other revaluation reserve', no substantial movements were recognized. These reserves predominantly consist of a liability of € 8.2 million that has initially been set up at fair value versus equity, which represents the put option granted to Maccaferri on its remaining non-controlling interests in Bekaert Maccaferri Underground Solutions BVBA. Any subsequent changes in fair value of this financial liability are recognized through income statement in accordance with IFRS.

Deferred taxes booked in equity in thousands of €	2015	2016
As at 1 January	29 722	30 689
Restatement ¹	999	-
As at 1 January (restated)	30 721	30 689
Deferred taxes relating to other comprehensive income ¹	-520	-433
Inflation effects	146	183
Changes in ownership	342	393
As at 31 December	30 689	30 832

¹ See note 2.7. 'Restatement and reclassification effects'.

Deferred taxes relating to other comprehensive income are also recognized in OCI (see note 6.6. 'Deferred tax assets and liabilities'). The opening balance restatement of 2015 reflects the deferred tax effect of the IAS 19 restatement effected on the Ecuadorian defined-benefit plans.

Treasury shares in thousands of €	2015	2016
As at 1 January	-145 953	-144 747
Shares purchased	-	-1 114
Shares sold	1 206	17 887
As at 31 December	-144 747	-127 974

28 785 shares were bought back in 2016 both to anticipate any dilution and to hedge the cash flow risk on share-based payment plans, while 392 049 treasury shares were sold to the beneficiaries of the share-based payment plans of the Group. In 2015 the only treasury shares transactions related to 26 300 options being exercised (see note 6.12. 'Ordinary shares, treasury shares and equity settled share based payments'). Treasury shares sold are accounted for using FIFO.

Cumulative translation adjustments in thousands of €	2015	2016
As at 1 January	-6 149	-30 808
Exchange differences on dividends declared	-5 296	-352
Recycled to income statement - relating to disposed entities or step acquisitions	393	-
Changes in ownership	-2 359	-37
Movements arising from exchange rate fluctuations ¹	-17 397	35 483
As at 31 December	-30 808	4 286
Of which relating to entities with following functional currencies		
Chinese renminbi	158 720	138 100
US dollar ¹	35 554	43 121
Brazilian real	-170 636	-118 483
Chilean peso	-9 370	-1 128
Venezuelan bolivar	-42 344	-54 682
Indian rupee	-3 183	-2 720
Czech koruna	7 557	7 511
British pound	783	-8 201
Russian ruble	-5 433	-1 728
Other currencies	-2 456	2 496

¹ See note 2.7. 'Restatement and reclassification effects'.

The swings in CTA reflect both the exchange rate evolution and the relative importance of the net assets denominated in the presented currencies.

Retained earnings in thousands of €	2015	2016
As at 1 January	1 352 197	1 397 110
Reclassifications from other reserves	16 407	-
Equity instruments granted	-	4 387
Result for the period attributable to the Group	101 722	105 166
Dividends	-48 006	-50 472
Inflation adjustments	1 698	2 000
Treasury shares transactions	-	-9 235
Changes in ownership	-26 908	-16 562
As at 31 December	1 397 110	1 432 394

Reclassifications in retained earnings in 2015 related to historical fair value adjustments relating to business combinations before 2011 (€ 8.7 million) and equity-settled share-based payment plans (€ -25.1 million) which will no longer be accounted for using a dedicated reserve as from 2016. The latter is illustrated by the equity instruments granted (€ 4.4 million) which are posted directly to retained earnings as from 2016. Inflation adjustments reflect the use of inflation accounting in Venezuela, as required under IFRS in a hyperinflationary economy. Treasury shares transactions (€ -9.2 million) represents the difference between the proceeds and the FIFO book value of the shares that were sold. Changes in ownership in 2015 (€ -26.9 million) mainly related to purchases of non-controlling interests (€ -27.7 million) and to business combinations and business disposals (€ 0.8 million), while in 2016 these predominantly related to the BBRG business combination (€ -16.4 million).

6.14. Non-controlling interests

Carrying amount in thousands of €	2015	2016
As at 1 January (as reported)	199 421	129 440
Restatement ¹	-2 348	-
As at 1 January (restated)	197 073	129 440
Changes in Group structure	-85 152	10 620
Share of the result for the period ¹	3 742	7 255
Share of other comprehensive income excluding CTA ¹	655	29
Dividend pay-out	-7 391	-17 037
Capital increases	14 967	-
Exchange gains and losses (-) ¹	5 546	494
As at 31 December	129 440	130 801

¹ See note 2.7. 'Restatement and reclassification effects'.

The changes in Group structure in 2016 mainly relate to the merger with Bridon. In 2015, the changes in Group structure mainly relate to Bekaert acquiring the remaining non-controlling interests held by the Chilean partners in the Ropes entities in December. Other changes in Group structure originated from the business combination with Pirelli, the acquisition of the remaining non-controlling interests in two Chinese companies and in the Malaysian and Indonesian 'Southern Wire' companies from Southern Steel, and the loss of control in Bekaert (Xinyu) New Materials Co Ltd.

In 2016, the share of the result for the period mainly improved due to the positive contribution from the Wire companies, while the BBRG entities were hit by the sagging demand from the oil and gas sector.

In accordance with IFRS 12, 'Disclosures of Interests in Other Entities', following information is provided on subsidiaries that have non-controlling interests ('NCI') that are material to the Group. The objective of IFRS 12 is to require an entity to disclose information that enables users of its financial statements evaluate (a) the nature and risks associated with its interests in other entities, and (b) the effects of those interests on its financial position, financial performance and cash flows. Bekaert has many partnerships across the world, most of which would not individually meet any reasonable materiality criterion. Therefore, the Group has identified three non-wholly owned groups of entities which are interconnected through their line of business and shareholder structure: (1) the BBRG entities, a global business in which Bekaert has recently expanded its worldwide footprint; (2) the Wire entities in Chile and Peru, where the non-controlling interests are mainly held by the Chilean partners, and (3) the Wire entities in the Andina region, where the non-controlling interests are mainly held by the Ecuadorian Kohn family and ArcelorMittal. In presenting aggregated information for these entity groups, only intercompany effects within each entity group have been eliminated, while all other entities of the Group have been treated as third parties.

Entities included in material NCI disclosure	Country	Proportion of NCI at year-end	
		2015	2016
BBRG entities			
Acma Inversiones SA	Chile	0.0%	40.0%
BBRG (Purchaser) Ltd	United Kingdom	0.0%	40.0%
BBRG (Subsidiary) Ltd	United Kingdom	0.0%	40.0%
BBRG Finance (UK) Ltd	United Kingdom	0.0%	40.0%
BBRG Holding (UK) Ltd	United Kingdom	0.0%	40.0%
BBRG Operations (UK) Ltd	United Kingdom	0.0%	40.0%
BBRG Production (UK) Ltd	United Kingdom	0.0%	40.0%
Bekaert (Shenyang) Advanced Cords Co, Ltd	China	0.0%	40.0%
Bekaert Advanced Cords Aalter NV	Belgium	0.0%	40.0%
Bekaert Cimaf Cabos	Brazil	0.0%	40.0%
Bekaert Wire Rope Industry NV	Belgium	0.0%	40.0%
Bekaert Wire Ropes Pty Ltd	Australia	0.0%	40.0%
Bridge Finco LLC	United States	0.0%	40.0%
Bridon (Hangzhou) Ropes Co Ltd	China	0.0%	40.1%
Bridon (South East Asia) Ltd	China	0.0%	40.1%
Bridon Australia Pty Ltd	Australia	0.0%	40.1%
Bridon Coatbridge Limited	United Kingdom	0.0%	40.0%
Bridon do Brasil Representações Comércio e Indústria de Cabos Ltda	Brazil	0.0%	40.1%
Bridon Holdings Ltd	United Kingdom	0.0%	40.1%
Bridon Hong Kong Limited	China	0.0%	40.1%
Bridon International GmbH	Germany	0.0%	40.0%
Bridon International Limited	United Kingdom	0.0%	40.0%
Bridon Ltd	United Kingdom	0.0%	40.0%
Bridon New Zealand Limited	New Zealand	0.0%	40.1%
Bridon Pension Trust (No Two) Limited	United Kingdom	0.0%	40.0%
Bridon Scanrope AS	Norway	0.0%	40.1%
Bridon Scheme Trustees Ltd	United Kingdom	0.0%	40.0%
Bridon Singapore (Pte) Ltd	Singapore	0.0%	40.1%
Bridon-American Corporation	United States	0.0%	40.0%
Bridon-Bekaert Ropes Group (UK) Ltd	United Kingdom	0.0%	40.0%
Bridon-Bekaert Ropes Group Ltd	United Kingdom	0.0%	40.0%
British Ropes Limited	United Kingdom	0.0%	40.0%
Gloucester Rope & Tackle Company Limited	United Kingdom	0.0%	40.0%
NV Bridon Ropes SA	Belgium	0.0%	40.1%
Procables SA	Peru	3.9%	42.3%
Procables Wire Ropes SA	Chile	0.0%	40.0%
Prodinsa SA	Chile	0.0%	40.0%
PT Bridon	Indonesia	0.0%	40.1%
Wire Rope Industries Ltd/Industries de Câbles d'Acier Ltée	Canada	0.0%	40.0%
Wire Rope Industries USA, Inc	United States	0.0%	40.0%
Wire entities Chile and Peru			
Acma SA	Chile	48.0%	48.0%
Acmanet SA	Chile	48.0%	48.0%
Industrias Acmanet Ltda	Chile	48.0%	48.0%
Industrias Chilenas de Alambre - Inchalam SA	Chile	48.0%	48.0%
Procercos SA	Chile	48.0%	48.0%
Prodalam SA	Chile	48.0%	48.0%
Impala SA	Panama	48.0%	48.0%
Productos de Acero Cassadó SA	Peru	62.5%	62.5%
Prodac Contrata SAC	Peru	62.5%	62.5%
Prodac Selva SAC	Peru	62.5%	62.5%
Wire entities Andina region			
Bekaert Ideal SL	Spain	20.0%	20.0%
Productora de Alambres Colombianos - Proalco SAS	Colombia	20.0%	20.0%
Bekaert Costa Rica SA	Costa Rica	41.6%	41.6%
BIA Alambres Costa Rica SA	Costa Rica	41.6%	41.6%
Ideal Alambrec SA	Ecuador	41.6%	41.6%
InverVicson SA	Venezuela	20.0%	20.0%
Vicson SA	Venezuela	20.0%	20.0%

The principal activity of the main entities listed above is manufacturing and selling wire, ropes and other wire products, mainly for the local market. Following entities are essentially holdings, having interests in one or more of the other entities listed above: Acma Inversiones SA, Procables Wire Ropes SA, Bekaert Wire Rope Industry NV, BBRG (Purchaser) Ltd, BBRG (Subsidiary) Ltd, BBRG Finance (UK) Ltd, BBRG Holding (UK) Ltd, BBRG Operations (UK) Ltd, BBRG Production (UK) Ltd, Bridon Holdings Ltd, Bridon-Bekaert Ropes Group (UK) Ltd, Bridon-Bekaert Ropes Group Ltd, Industrias Acmanet Ltda, Procercos SA, Impala SA and Bekaert Ideal SL. The following table shows the relative importance of the entity groups with material NCI in terms of results and equity attributable to NCI.

Material and other NCI in thousands of €	Result attributable to NCI		Equity attributable to NCI	
	2015	2016	2015	2016
BBRG entities	957	-14 492	250	-9 506
Wire entities Chile and Peru	6 295	10 622	83 886	86 918
Wire entities Andina region ¹	-1 919	2 677	18 571	17 731
Consolidation adjustments on material NCI ¹	-1 612	3 014	-31 998	-24 327
Contribution of material NCI to consolidated NCI	3 721	1 821	70 709	70 816
Other NCI	21	5 434	58 731	59 985
Total consolidated NCI	3 742	7 255	129 440	130 801

¹ See note 2.7. 'Restatement and reclassification effects'.

The substantial consolidation adjustments to the equity attributable to material NCI in 2016 are largely due to the BBRG entities, more specifically the merger with Bridon.

The following tables show concise basic statements of the non-wholly owned groups of entities.

BBRG entities in thousands of €	2015	2016
Current assets	89 233	271 084
Non-current assets	125 131	356 840
Current liabilities	184 034	152 743
Non-current liabilities	41 618	499 908
Equity attributable to the Group	-11 538	-15 221
Equity attributable to NCI	250	-9 506

The Bridon-Bekaert Ropes Group entered into a Senior Facilities Agreement in order to refinance the newly created company.

As part of this Senior Facilities Agreement the following significant restrictions on the borrower's ability to access or use its assets or settle its liabilities exist:

- 1) The borrower cannot re-borrow any prepaid part of the Term Facilities (2016: USD 324.9 million) or any Additional Term Facility (2016: nil).
- 2) In relation to each financial year an amount equal to the relevant percentage of excess cash flow for that financial year, is to be applied in prepayment of the facilities, depending on actual leverage (i.e. net debt divided by adjusted Underlying EBITDA) as set out below:
 - Leverage greater than or equal to 2.75: 50%,
 - Leverage less than 2.75 but greater than or equal to 2.00: 25%,
 - Leverage less than 2.00: relevant percentage is 0%,
 whereby a threshold amount equal to USD 5.0 million can be retained from the amount to be paid.
- 3) Acquisition and insurance proceeds (the net proceeds of acquisition related and insurance claims after deduction of related costs and taxes) in excess of USD 2.5 million have to be repaid to the lenders.
- 4) Except as permitted, the Parent (i.e. BBRG Production (UK) Ltd or any of its subsidiaries shall not:
 - declare, make or pay any dividend, charge, fee or other distribution (or related interests),
 - redeem, repurchase, retire or repay any of its share capital or share premium reserve.
- 5) There are strict limitations to the repayment, prepayment or exchange of the shareholder loans (2016: USD 94.4 million) or interests on the shareholder loans. Shareholder loans are subordinate to the Senior Facilities Agreement in all material aspects.

BBRG entities in thousands of €	2015	2016
Sales	144 732	303 158
Expenses	-150 105	-339 795
Result for the period	-5 373	-36 637
Result for the period attributable to the Group	-6 330	-22 145
Result for the period attributable to NCI	957	-14 492
Other comprehensive income for the period	-16 531	3 748
OCI attributable to the Group	-11 907	2 246
OCI attributable to NCI	-4 624	1 502
Total comprehensive income for the period	-21 904	-32 889
Total comprehensive income attributable to the Group	-18 237	-19 899
Total comprehensive income attributable to NCI	-3 667	-12 990
Dividends paid to NCI	-	-
Net cash inflow (outflow) from operating activities	6 398	-44 254
Net cash inflow (outflow) from investing activities	-189 666	-89 958
Net cash inflow (outflow) from financing activities	184 465	179 691
Net cash inflow (outflow)	1 197	45 479

The result for the period of the BBRG entities, both in 2015 and 2016 was adversely affected by the weak economic situation in the oil and gas sector.

Wire entities Chile and Peru in thousands of €	2015	2016
Current assets	181 799	201 110
Non-current assets	140 010	146 329
Current liabilities	112 300	136 513
Non-current liabilities	51 123	46 651
Equity attributable to the Group	74 500	77 357
Equity attributable to NCI	83 886	86 918

Wire entities Chile and Peru in thousands of €	2015	2016
Sales	434 933	422 946
Expenses	-422 039	-402 663
Result for the period	12 894	20 283
Result for the period attributable to the Group	6 599	9 662
Result for the period attributable to NCI	6 295	10 622
Other comprehensive income for the period	-1 273	11 059
OCI attributable to the Group	-1 428	5 636
OCI attributable to NCI	155	5 423
Total comprehensive income for the period	11 621	31 342
Total comprehensive income attributable to the Group	5 171	15 298
Total comprehensive income attributable to NCI	6 450	16 045
Dividends paid to NCI	-5 532	-12 264
Net cash inflow (outflow) from operating activities	52 954	45 281
Net cash inflow (outflow) from investing activities	-9 502	-8 321
Net cash inflow (outflow) from financing activities	-36 885	-35 103
Net cash inflow (outflow)	6 567	1 857

The increase in current and non-current assets was mainly due to investments and working capital, whereas the increase in liabilities was mainly driven by accounts payables and current debt.

The sales decrease in Prodac and Inchalam was offset by sales increase in Prodalam and Acma. Operating results improved in all the companies. Other comprehensive income mainly includes exchange differences that are affected by the weakened Chilean peso. Operating cash flows decreased due to the increase of working capital.

Wire entities Andina region in thousands of €	2015	2016
Current assets	110 021	102 623
Non-current assets ¹	73 875	72 892
Current liabilities	101 758	103 960
Non-current liabilities ¹	29 994	28 753
Equity attributable to the Group	33 573	25 071
Equity attributable to NCI	18 571	17 731

¹ See note 2.7. 'Restatement and reclassification effects'.

Wire entities Andina region in thousands of €	2015	2016
Sales	204 551	184 668
Expenses ¹	-208 333	-179 714
Result for the period	-3 783	4 953
Result for the period attributable to the Group ¹	-1 864	2 276
Result for the period attributable to NCI ¹	-1 919	2 677
Other comprehensive income for the period	3 464	-11 185
OCI attributable to the Group ¹	1 007	-9 293
OCI attributable to NCI ¹	2 457	-1 892
Total comprehensive income for the period	-319	-6 232
Total comprehensive income attributable to the Group ¹	-857	-7 017
Total comprehensive income attributable to NCI ¹	538	785
Dividends paid to NCI	-850	-1 651
Net cash inflow (outflow) from operating activities	11 221	31 230
Net cash inflow (outflow) from investing activities	-6 901	-4 626
Net cash inflow (outflow) from financing activities	7 679	-6 980
Net cash inflow (outflow)	11 999	19 624

¹ See note 2.7. 'Restatement and reclassification effects'.

The major balance sheet subtotals remained fairly constant, although net assets of Venezuela dwindled further as a result of the spectacular depreciation of the bolivar. Current liabilities in Venezuela decreased due to the repayment of foreign currency debt.

Sales increased in all countries except Venezuela and Ecuador. Ecuador and Costa Rica recorded important improvements in operating results.

Vicson SA (Venezuela) remains exposed to restrictions on the repatriation of cash due to foreign exchange regulations in Venezuela.

6.15. Employee benefit obligations

The total net liabilities for employee benefit obligations, which amounted to € 316.8 million as at 31 December 2016 (€ 304.0 million as at year-end 2015), are as follows:

in thousands of €	2015	2016
Liabilities for		
<i>Post-employment defined-benefit plans</i> ¹	165 491	172 213
<i>Other long-term employee benefits</i>	6 077	6 333
<i>Cash-settled share-based payment employee benefits</i>	1 946	3 594
<i>Short-term employee benefits</i>	117 532	124 799
<i>Termination benefits</i>	12 915	9 888
Total liabilities in the balance sheet	303 961	316 827
of which		
<i>Non-current liabilities</i> ¹	172 680	182 641
<i>Current liabilities</i>	131 281	132 913
<i>Liabilities associated with assets held for sale</i> ²	-	1 273
Assets for		
<i>Defined-benefit pension plans</i>	-7	-42
Total assets in the balance sheet	-7	-42
Total net liabilities	303 954	316 785

¹ See note 2.7. 'Restatement and reclassification effects'.

² See note 6.11. 'Assets classified as held for sale and liabilities associated with those assets'.

Post-employment benefit plans

In accordance with IAS 19, 'Employee benefits', post-employment benefit plans are classified as either defined-contribution plans or defined-benefit plans.

Defined-contribution plans

For defined-contribution plans, Bekaert pays contributions to publicly or privately administered pension funds or insurance companies. Once the contributions have been paid, the Group has no further payment obligation. These contributions constitute an expense for the year in which they are due.

The Belgian defined-contribution pension plans are by law subject to minimum guaranteed rates of return. Pension legislation was amended at the end of 2015 and defines the minimum guaranteed rate of return as a variable percentage linked to government bond yields observed in the market as from 1 January 2016 onwards. For 2016 the minimum guaranteed rate of return becomes 1.75% on employer contributions and employee contributions. The old rates (3.25% on employer contributions and 3.75% on employee contributions) continue to apply to the accumulated past contributions in the group insurance as at 31 December 2015. As a consequence, the defined-contribution plans are reported as defined-benefit obligations at year end, whereby an actuarial valuation was performed.

Bekaert participates in a multi-employer defined-benefit plan in the Netherlands funded through the Pensioenfonds Metaal & Techniek. This plan is treated as a defined-contribution plan because no information is available with respect to the plan assets attributable to Bekaert; contributions for this plan amounted to € 0.9 million (2015: € 0.8 million).

Defined-contribution plans	2015	2016
in thousands of €		
Expenses recognized	18 545	14 169

Defined-benefit plans

Several Bekaert companies operate retirement benefit and other post-employment benefit plans. These plans generally cover all employees and provide benefits which are related to salary and length of service.

The latest actuarial valuations under IAS 19 were carried out as of 31 December 2016 for all significant post-employment defined-benefit plans by independent actuaries. The Group's largest defined-benefit obligations are in Belgium, the United States and the United Kingdom (new since 2016). They account for 87.1% (2015: 84.3%) of the Group's defined-benefit obligations and 99.8% (2015: 99.8%) of the Group's plan assets.

Plans in Belgium

The funded plans in Belgium mainly relate to retirement plans representing a defined-benefit obligation of € 189.4 million (2015: € 164.1 million) and € 168.5 million assets (2015: € 147.3 million). This is including the defined-contribution plans funded through a group insurance.

The traditional defined-benefit plans foresee in a lump sum payment upon retirement and in risk benefits in case of death or disability prior to retirement. The plans are externally funded through two self-administrated institutions for occupational retirement provision (IORP). On a regular basis, an Asset Liability Matching (ALM) study is performed in which the consequences of strategic investment policies are analyzed in terms of risk-and-return profiles. Statement of investment principles and funding policy are derived from this study. The purpose is to have a well-diversified asset allocation to control the risk. Investment risk and liability risk are monitored on a quarterly basis. Funding policy targets to be at least fully funded in terms of the technical provision (this is a prudent estimate of the pension liabilities).

Other plans mainly relate to pre-retirement pensions (defined-benefit obligation € 20.7 million (2015: € 23.2 million)) which are not externally funded. An amount of € 8.9 million (2015: € 8.5 million) relates to employees in active service who have not yet entered into any pre-retirement agreement.

Plans in the United States

The funded plans in the United States mainly relate to pension plans representing a defined-benefit obligation of € 146.3 million (2015: € 142.2 million) and assets of € 99.7 million (2015: € 92.4 million). The plans provide for benefits for the life of the plan members but have been closed for new entrants. During 2016 the largest plan was also closed for future accruals. Plan assets are invested, in fixed-income funds and in equities. Based on an Asset Liability Matching study the strategic asset allocation has been shifted more towards long duration fixed income funds. Funding policy targets to be sufficiently funded in terms of Pension Protection Act requirements and thus to avoid benefit restrictions or at-risk status of the plans.

Unfunded plans mainly relate to medical care (defined-benefit obligation € 5.0 million (2015: € 5.5 million)) and are not externally funded.

Plans in the United Kingdom

The legal entity in UK sponsors the Bridon Group (2013) Pension Scheme, a funded defined-benefit pension scheme for qualifying UK employees. The scheme is administrated by a separate Board of Trustees which is legally separate from the company. The Board of Trustees consists of representatives of both employer and employees. The trustees are required by law to act in the interest of all relevant beneficiaries and are responsible for the investment policy with regard to the assets plus the day to day administration of the benefits.

The latest actuarial valuation under IAS 19 was carried out as of 31 December 2016 by independent actuaries and resulted into a defined-benefit obligation of € 98.3 million and assets of € 96.1 million. The defined-benefit obligation includes benefits for deferred pensioners and current pensioners. Broadly, about 95% of the liabilities are attributable to non-pensioners and 5% to current pensioners.

UK legislation requires that pension schemes are funded prudently, i.e. using prudent assumptions as opposed to best estimate assumptions under IAS 19. The last funding valuation was carried out by a qualified actuary as at 31 December 2013 and showed a funding deficit of GBP 12.4 million. The company has agreed to pay deficit contributions. These company contributions were expected to make good this shortfall by 31 December 2017. The next funding valuation is due on 31 December 2016 – to be submitted with the Pension Regulator by March 2018 - at which progress towards full-funding will be reviewed.

The amounts recognized in the balance sheet are as follows:

in thousands of €	2015	2016
Belgium		
Present value of funded obligations	164 091	189 422
Fair value of plan assets	-147 325	-168 520
Deficit / surplus (-) of funded obligations	16 766	20 902
Present value of unfunded obligations	25 618	23 286
Total deficit / surplus (-) of obligations	42 384	44 188
United States		
Present value of funded obligations	142 225	146 289
Fair value of plan assets	-92 386	-99 704
Deficit / surplus (-) of funded obligations	49 839	46 585
Present value of unfunded obligations	9 884	10 762
Total deficit / surplus (-) of obligations	59 723	57 347
United Kingdom		
Present value of funded obligations	-	98 336
Fair value of plan assets	-	-96 087
Deficit / surplus (-) of funded obligations	-	2 249
Present value of unfunded obligations	-	-
Total deficit / surplus (-) of obligations	-	2 249
Other		
Present value of funded obligations	666	874
Fair value of plan assets	-458	-782
Deficit / surplus (-) of funded obligations	208	92
Present value of unfunded obligations ¹	63 169	68 294
Total deficit / surplus (-) of obligations	63 377	68 386
Total		
Present value of funded obligations	306 982	434 921
Fair value of plan assets	-240 169	-365 093
Deficit / surplus (-) of funded obligations	66 813	69 828
Present value of unfunded obligations ¹	98 671	102 342
Total deficit / surplus (-) of obligations	165 484	172 170

¹ See note 2.7. 'Restatement and reclassification effects'.

The movement in the defined-benefit obligation, plan assets, net liability and asset over the year is as follows:

in thousands of €	Defined-benefit obligation	Plan assets	Amount not recognized as an asset	Net liability / asset (-)
As at 1 January 2015¹	355 978	-178 146		169 630
Current service cost ¹	14 190	-		14 190
Past service cost	2 787	-		2 787
Gains (-) / losses from settlements	169	-		169
Interest expense / income (-) ¹	11 087	-5 299		5 788
Net benefit expense / income (-) recognized in profit and loss	28 233	-5 299		22 934
<i>Components recognized in EBIT</i>	-	-		17 146
<i>Components recognized in financial result</i>	-	-		5 788
Remeasurements				
<i>Return on plan assets, excluding amounts included in interest expense / income (-)</i>	-	3 025		3 025
<i>Gain (-) / loss from change in demographic assumptions</i>	-6 660	-		-6 660
<i>Gain (-) / loss from change in financial assumptions¹</i>	-13 185	-		-13 185
<i>Experience gains (-) / losses¹</i>	2 347	-		2 347
Changes recognized in equity	-17 498	3 025		-14 473
Contributions				
Employer contributions / direct benefit payments	-	-30 053		-30 053
Employee contributions	162	-162		-
Payments from plans				
Benefit payments	-30 438	30 438		-
Reclassifications	48 861	-50 321		-1 460
Acquisitions	3 446	-		3 446
Disposals	-164	81		-83
Foreign-currency translation effect¹	17 073	-9 731		7 342
As at 31 December 2015	405 653	-240 168		165 485
As at 1 January 2016	405 653	-240 168		165 485
Current service cost	17 990	-		17 990
Past service cost	-6 070	-		-6 070
Gains (-) / losses from settlements	-1 905	3 075		1 170
Interest expense / income (-)	13 533	-8 093	87	5 527
Net benefit expense / income (-) recognized in profit and loss	23 549	-5 018	87	18 618
<i>Components recognized in EBIT</i>	-	-		13 090
<i>Components recognized in financial result</i>	-	-		5 527
Remeasurements				
<i>Return on plan assets, excluding amounts included in interest expense / income (-)</i>	-	-17 476		-17 476
<i>Gain (-) / loss from change in demographic assumptions</i>	-2 286	-		-2 286
<i>Gain (-) / loss from change in financial assumptions</i>	26 716	-		26 716
<i>Experience gains (-) / losses</i>	9 340	-		9 340
Change in irrecoverable surplus other than interest	-	-	-6 318	-6 318
Changes recognized in equity	33 769	-17 476	-6 318	9 975
Contributions				
Employer contributions / direct benefit payments	-	-32 268		-32 268
Employee contributions	145	-145		-
Payments from plans				
Benefit payments	-25 149	25 149		-
Acquisitions	96 222	-95 202	6 477	7 497
Foreign-currency translation effect	3 074	36	-246	2 863
As at 31 December 2016	537 263	-365 093	-	172 170

¹ See note 2.7. 'Restatement and reclassification effects'.

The past service cost mainly relates to the pension plan freeze in the USA, the restructuring in Malaysia and a change in the retirement gratuity plan in Peru. Settlement costs mainly relate to the restructuring in Turkey. The change in asset ceiling relates to the UK whereby the initial asset ceiling upon acquisition during the year was cancelled by the evolution in assets and liabilities. In the income statement, current and past service cost, including gains or losses from settlements are included in the operating result (EBIT), and interest expense or income is included in interest expense, under interest element of interest-bearing provisions.

Reimbursement rights arising from reinsurance contracts covering retirement pensions, death and disability benefits in Germany amount to € 0.3 million (2015: € 0.3 million).

Estimated contributions and direct benefit payments for 2017 are as follows:

Estimated contributions and direct benefit payments	
in thousands of €	2017
Pension plans	27 174
Total	27 174

Fair values of plan assets at 31 December were as follows:

in thousands of €	2015	2016
Belgium		
Bonds		
Bonds	33 032	34 120
Equity	55 165	62 290
Cash	8 807	9 404
Insurance contract	50 321	62 706
Total Belgium	147 325	168 520
United States		
Bonds		
USD Long Duration Bonds	49 132	53 532
USD Fixed Income	9 358	9 956
USD Guaranteed Deposit	5 937	5 522
Equity		
USD Equity	20 084	22 251
Non-USD Equity	7 875	8 443
Total United States	92 386	99 704
United Kingdom		
Bonds	-	9 911
Derivatives	-	45 738
Equity	-	39 695
Cash	-	743
Total United States	-	96 087
Other		
Bonds	458	782
Total Other	458	782
Total	240 169	365 093

In the USA, investments are primarily made through mutual fund investments and insurance company separate accounts, in quoted equity and debt instruments. In Belgium, the investments are made through mutual fund investments in quoted equity and debt instruments. Investments are well-diversified so that the failure of any single investment would not have a material impact on the overall level of assets. The Group's plan assets include no direct positions in Bekaert shares or bonds, nor do they include any property used by a Bekaert entity.

The principal actuarial assumptions on the balance sheet date (weighted averages based on outstanding DBO) were:

Actuarial assumptions	2015	2016
Discount rate ¹	3.1%	2.7%
Future salary increases	3.4%	3.1%
Underlying inflation rate	2.8%	2.6%
Health care cost increases (initial)	6.3%	6.6%
Health care cost increases (ultimate)	4.5%	4.8%
Health care (years to ultimate rate)	8	7

¹ See note 2.7. 'Restatement and reclassification effects'.

The discount rate for the USA and Belgium is reflective both of the current interest rate environment and the plan's distinct liability characteristics. The plan's projected cash flows are matched to spot rates, after which an associated present value is developed. A single equivalent discount rate is then determined that produces that same present value. The underlying yield curve for deriving spot rates is based on high quality AA-credit rated corporate bonds issues denominated in the currency of the applicable regional market.

As a consequence of the Annual Improvements to IFRS 2012-2014 the rate used to discount post-employment benefit obligations was determined by reference to market yields on bonds denominated in the currency used, which is the US dollar in Ecuador. This has triggered a restatement of the 2015 disclosures.

This resulted into the following discount rates:

Discount rates	2015	2016
Belgium	2.0%	1.5%
United States	4.2%	4.0%
United Kingdom	-	2.6%
Other ¹	4.2%	3.4%

¹ See note 2.7. 'Restatement and reclassification effects'.

Assumptions regarding future mortality are based on actuarial advice in accordance with published statistics and experience in each territory. These assumptions translate into the following average life expectancy in years for a pensioner retiring at age 65:

	2015	2016
Life expectancy of a man aged 65 (years) at balance sheet date	20.9	20.7
Life expectancy of a woman aged 65 (years) at balance sheet date	23.1	23.3
Life expectancy of a man aged 65 (years) ten years after balance sheet date	21.7	21.7
Life expectancy of a woman aged 65 (years) ten years after balance sheet date	24.0	24.4

Sensitivity analyses show the following effects:

Sensitivity analysis in thousands of €	Change in assumption	Impact on defined-benefit obligation		
Discount rate	-0.50%	Increase by	34 657	6.5%
Salary growth rate	0.50%	Increase by	11 347	2.1%
Health care cost	0.50%	Increase by	192	0.04%
Life expectancy	Increase by 1 year	Increase by	7 185	1.3%

The above analyses were done on a mutually exclusive basis, and holding all other assumptions constant.

Through its defined-benefit plans, the Group is exposed to a number of risks, the most significant of which are detailed below:

Asset volatility	The plan liabilities are calculated using a discount rate set with reference to corporate bond yields; if plan assets underperform this yield, this will create a deficit.
Changes in bond yields	A decrease in corporate bond yields will increase plan liabilities, although this will be partially offset by an increase in the value of the plans' bond holdings.
Salary risk	The majority of the plans' benefit obligations are calculated by reference to the future salaries of plan members. As such, a salary increase of plan members higher than expected will lead to higher liabilities.
Longevity risk	Belgian pension plans provide for lump sum payments upon retirement. As such there is limited or no longevity risk. Pension plans in the USA provide for benefits for the life of the plan members, so increases in life expectancy will result in an increase in the plans' liabilities.

The weighted average durations of the defined-benefit obligations are as follows:

Weighted average durations of the DBO in years	2016
Belgium	12.5
United States	12.6
United Kingdom	23.5
Other	10.8
Total	14.4

¹ See note 2.7. 'Restatement and reclassification effects'.

Other long-term employee benefits

The other long-term employee benefits relate to service awards. The increase of the liabilities is due to acquisitions and a reclassification of one plan in Italy.

Cash-settled share-based payment employee benefits

Stock appreciation rights

The Group issues stock appreciation rights (SARs) to certain management employees, granting them the right to receive the intrinsic value of the SARs at the date of exercise. These SARs are accounted for as cash-settled share-based payments in accordance with IFRS 2. The fair value of each grant is recalculated at balance sheet date, using the same binomial pricing model as for the equity-settled share-based payments (see note 6.12. 'Ordinary shares, treasury shares and equity settled share based payments'). Based on local regulations, the exercise price for any grant under the USA SAR plan is equal to the average closing price of the Company's share during the thirty days following the date of the offer. The exercise price for the other SAR plans is determined in the same way as for the equity-settled stock option plans: it is equal to the lower of (i) the average closing price of the Company's share during the thirty days preceding the date of the offer, and (ii) the last closing price preceding the date of the offer.

Following inputs to the model are used for all grants: share price at balance sheet date: € 38.49 (2015: € 28.39), expected volatility of 39% (2015: 39%), expected dividend yield of 3.0% (2015: 3.0%), vesting period of 3 years, contractual life of 10 years, employee exit rate of 4% in Asia (2015: 4%) and 3% in other countries (2015: 3%), and an exercise factor of 1.40 (2015: 1.40). Inputs for risk-free interest rates vary by grant and are based on the return of Belgian OLO's (Obligation Linéaire / Lineaire Obligatie) with a term equal to the maturity of the SAR grant under consideration.

Exercise prices and fair values of outstanding SARs by grant are shown below:

USA SAR Plan details by grant in €	Exercise price	Fair value as at 31	Fair value as at 31
		Dec 2015	Dec 2016
Grant 2009	16.58	11.20	-
Grant 2010	37.05	2.69	5.62
Grant 2011	83.43	1.16	2.15
Grant 2012	27.63	6.44	12.23
Grant 2013	22.09	8.36	16.52
Exceptional grant 2013	22.51	9.45	16.13
Grant 2014	25.66	7.85	13.59
Grant 2015	25.45	8.39	14.54
Grant 2016	28.38	7.80	13.40
Grant 2017 ¹	38.86	-	10.36

Other SAR Plans details by grant in €	Exercise price	Fair value as at 31	Fair value as at 31
		Dec 2015	Dec 2016
Grant 2007	30.17	3.06	-
Grant 2008	28.33	4.83	10.47
Grant 2009	16.66	11.37	20.71
Grant 2010	33.99	4.56	8.89
Grant 2011	77.00	1.31	2.48
Grant 2012	25.14	7.08	13.85
Grant 2013	19.20	9.84	19.29
Exceptional grant 2013	21.45	9.93	17.11
Grant 2014	25.38	7.84	13.68
Grant 2015	26.06	7.96	14.05
Grant 2016	26.38	8.01	13.93
Grant 2017 ¹	39.43	-	9.84

¹ The fair value of this grant has been determined at grant date. See note 7.6. 'Events after the balance sheet date'.

At 31 December 2016, the total liability for the USA SAR plan amounted to € 1.4 million (2015: € 0.9 million), while the total liability for the other SAR plans amounted to € 2.0 million (2015: € 1.1 million).

The Group recorded a total expense of € 1.4 million (2015: expense of € 0.3 million) during the year in respect of SARs.

Performance Share Units

Certain management employees received cash-settled Performance Share Units (PSUs) during 2016 entitling the beneficiary to receive the value of Performance Share Units subject to the conditions of the Performance Share Plan 2015-2017. These Performance Share Units will vest following a vesting period of three years, conditional to the achievement of a pre-set performance target. The performance target was set by the Board of Directors, in line with the Company strategy.

Under the terms of the cash-settled Performance Share Plan, a regular offer of 13 100 Performance Share Units was made on 15 December 2016. The granted units represent a fair value of € 0.6 million.

These Performance Share Units are accounted for as cash-settled share-based payments in accordance with IFRS 2. The fair value of each grant is recalculated at balance sheet date, using the same binomial pricing model as for the equity-settled share-based payments (see note 6.12. 'Ordinary shares, treasury shares and equity settled share based payments').

Following inputs to the model are used for all grants: share price at balance sheet date: € 38.49 (2015: € 28.39), expected volatility of 39% (2015: 39%), expected dividend yield of 3.0% (2015: 3.0%), vesting period of 3 years and an employee exit rate of 4% (2015: 4%). Inputs for risk-free interest rates vary by grant and are based on the return of Belgian OLO's with a term equal to the maturity of the PSU grant under consideration.

The fair value of outstanding Performance Share Units by grant is shown below:

Performance Share Units details by grant in €	Fair value as at 31	Fair value as at 31
	Dec 2015	Dec 2016
Grant 2015	38.29	73.63
Grant 2016 ¹	-	47.93

¹ The fair value of this grant has been determined at grant date. See note 7.6. 'Events after the balance sheet date'.

At 31 December 2016, the total liability for the USA PSUs amounted to € 0.1 million, while the total liability for the other PSUs amounted to € 0.2 million.

The Group recorded a total expense of € 0.3 million during the year in respect of PSUs.

Short-term employee benefit obligations

Short-term employee benefit obligations relate to liabilities for remuneration and social security that are due within twelve months after the end of the period in which the employees render the related service.

6.16. Provisions

in thousands of €	Restructuring	Claims	Environment	Other	Total
As at 1 January 2016	5 266	5 907	29 929	36 069	77 171
Additional provisions	6 544	4 277	-	8 110	18 931
Unutilized amounts released	-1 603	-1 357	-48	-17 857	-20 865
Increase in present value	-	121	44	1 517	1 682
Charged to the income statement	4 941	3 041	-4	-8 230	-252
New consolidations	833	7 511	662	7 534	16 540
Reclassification to (-) / from held for sale	-	-2 755	-	-2 975	-5 730
Amounts utilized during the year	-2 109	-1 542	-471	-3 500	-7 622
Exchange gains (-) and losses	-78	-55	132	721	720
As at 31 December 2016	8 853	12 107	30 248	29 619	80 827
Of which					
<i>current</i>	<i>7 520</i>	<i>3 792</i>	<i>3 478</i>	<i>2 930</i>	<i>17 720</i>
<i>non-current - between 2 and 5 years</i>	<i>1 333</i>	<i>8 284</i>	<i>9 688</i>	<i>23 028</i>	<i>42 333</i>
<i>non-current - more than 5 years</i>	<i>-</i>	<i>31</i>	<i>17 082</i>	<i>3 661</i>	<i>20 774</i>

New restructuring provisions have been recorded in relation to the manufacturing footprint adjustment in Malaysia as well for the closure of the Scanrope operations in Norway. Some actions were already taken, and together with the continued implementation of previously announced programs in other plants, give rise to the reversed amounts of these provisions.

Provisions for claims mainly relate to product warranty programs and various product quality claims in several entities. As part of the opening balance on the merger with Bridon, a contingent liability has been recognized (see note 7.2. 'Effect of business combinations').

The environmental provisions mainly relate to sites in EMEA. The expected soil sanitation costs are reviewed at each balance sheet date, based on external expert assessments. Timing of settlement is uncertain as it is often triggered by decisions on the destination of the premises.

The decrease of other provisions include the reversal of corporate guarantees for a subsidiary in Venezuela (€ -16.3 million). New consolidations and additional provisions include an onerous lease provision for the Scanrope plant in Norway.

6.17. Interest-bearing debt

Information concerning the contractual maturities of the Group's interest-bearing loans and borrowings (current and non-current) is given below:

2016 in thousands of €	Due within 1 year	Due between 1 and 5 years	Due after 5 years	Total
Interest-bearing debt				
Finance leases	635	3 220	-	3 855
Credit institutions	295 390	257 184	229 341	781 915
Bonds	1 890	340 614	-	342 504
Convertible bonds	-	330 951	-	330 951
Total financial debt	297 915	931 969	229 341	1 459 225

2015 in thousands of €	Due within 1 year	Due between 1 and 5 years	Due after 5 years	Total
Interest-bearing debt				
Finance leases	219	3 545	-	3 764
Credit institutions ¹	294 799	163 737	-	458 536
Bonds	205 000	340 614	-	545 614
Convertible bonds	1 206	284 220	-	285 426
Total financial debt	501 224	792 116	-	1 293 340

¹ See note 2.7. 'Restatement and reclassification effects'.

Total financial debt increase is mainly due to Bridon-Bekaert Ropes Group. The Group repaid a Eurobond of € 205 million in December 2016. End of 2016, the Group has more actively used its short-term credit facilities (commercial program and uncommitted credit facilities).

As a general principle, loans are entered into by Group companies in their local currency to avoid currency risk. If funding is in another currency without an offsetting position on the balance sheet, the companies hedge the currency risk through derivatives (cross-currency interest-rate swaps or forward exchange contracts). Bonds, commercial paper and debt towards credit institutions are unsecured, except for the factoring program that has been set up with KBC and BNP Paribas Fortis.

For further information on financial risk management, we refer to note 7.3. 'Financial risk management and financial derivatives'.

Net debt calculation

The derivative representing the conversion option (€ 35.2 million vs € 5.8 million in 2015) embedded in the convertible bond is not included in the net debt. The table below summarizes the calculation of the net debt.

in thousands of €	2015	2016
Non-current interest-bearing debt	792 116	1 161 310
Current interest-bearing debt ¹	501 224	297 915
Total financial debt	1 293 340	1 459 225
Non-current financial receivables and cash guarantees	-9 694	-6 664
Current loans ¹	-34 773	-13 991
Short-term deposits	-10 216	-5 342
Cash and cash equivalents	-401 771	-365 546
Net debt	836 886	1 067 683

¹ See note 2.7. 'Restatement and reclassification effects'.

6.18. Other non-current liabilities

Carrying amount in thousands of €	2015	2016
Other non-current amounts payable	820	518
Derivatives (cf. note 7.3.)	14 384	44 355
Total	15 204	44 873

The derivatives relate to the embedded financial instrument (€ 35.2 million (2015: € 5.8 million)) of the convertible bond (cf. notes 6.17. and 7.3.) and the put option (€ 8.8 million (2015: € 8.6 million)) for a non-controlling interest in an investment.

6.19. Other current liabilities

Carrying amount in thousands of €	2015	2016
Other amounts payable	4 453	7 322
Derivatives (cf. note 7.3.)	22 236	7 767
Advances received	3 137	12 733
Other taxes	28 117	26 862
Accruals and deferred income ¹	7 310	7 156
Total	65 253	61 840

¹ See note 2.7. 'Restatement and reclassification effects'.

The derivatives include mainly CCIRs (€ 6.3 million (2015: € 17.7 million)) and forward exchange contracts (€ 1.5 million (2015: € 4.5 million)). Other taxes mainly relate to VAT payable, employment-related taxes withheld and other non-income taxes payable. The accrued interest on interest-bearing debt of € 6.3 million (2015: € 6.5 million) has been reclassified to interest bearing debt (see 2.7. 'Restatement and reclassification effects').